FIG.1

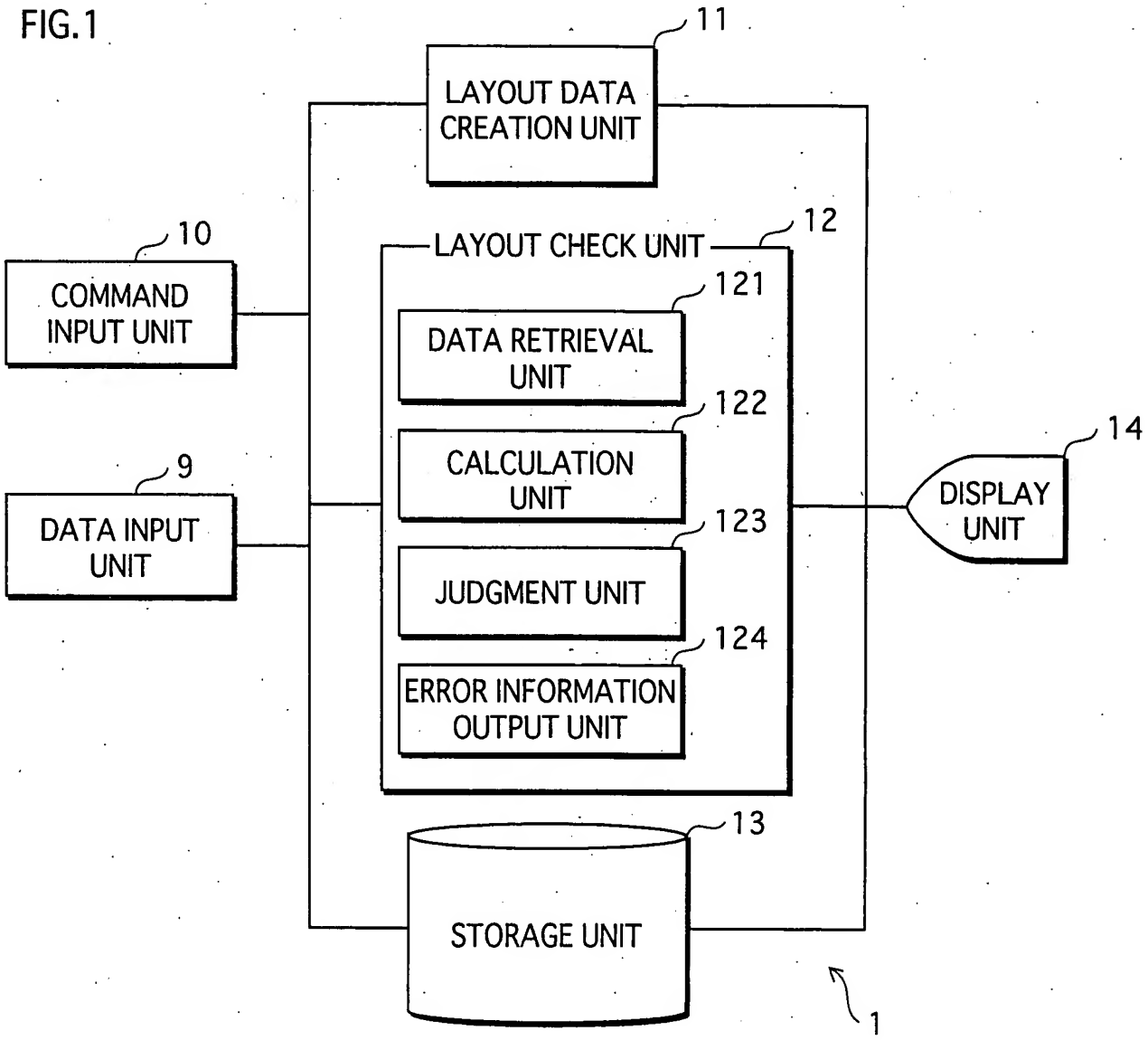

11
LAYOUT DATA CREATION UNIT
10
COMMAND INPUT UNIT
12
LAYOUT CHECK UNIT
121
DATA RETRIEVAL UNIT
122
CALCULATION UNIT
123
JUDGMENT UNIT
124
ERROR INFORMATION OUTPUT UNIT
9
DATA INPUT UNIT
14
DISPLAY UNIT
13
STORAGE UNIT
1

FIG.2

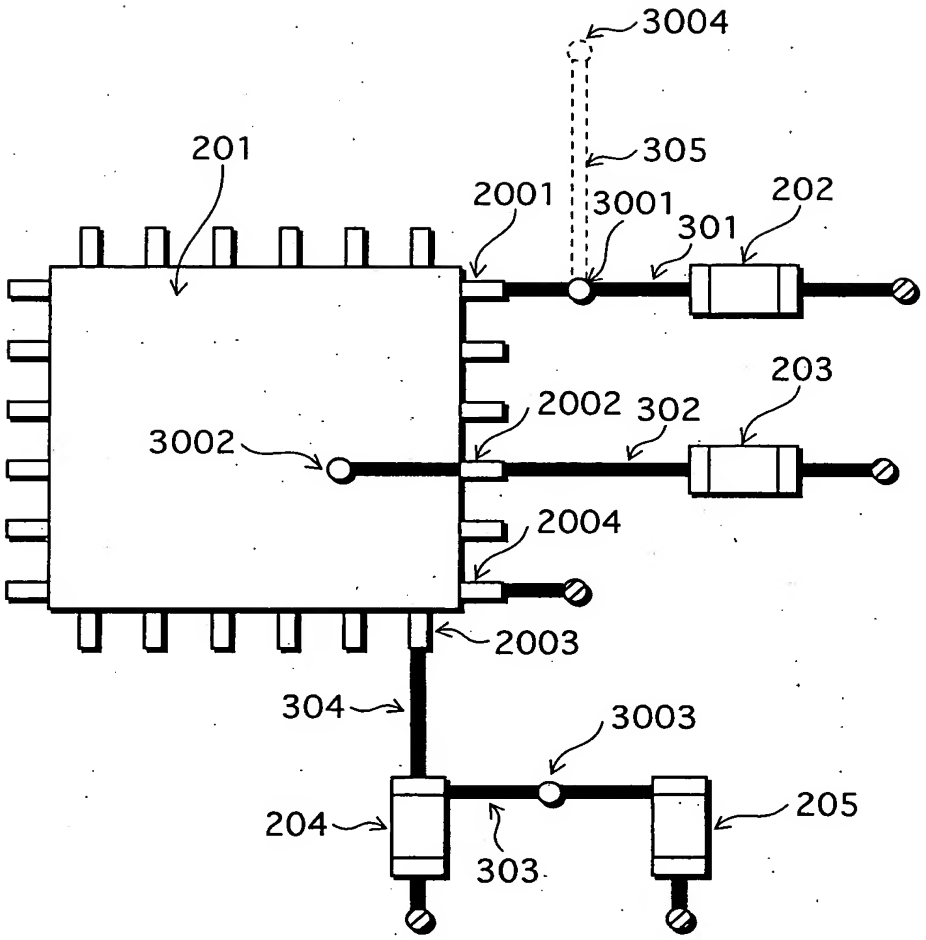

3004
201
305
2001
3001
301
202
203
2002
302
3002
2004
2003
304
3003
204
205
303

FIG.3

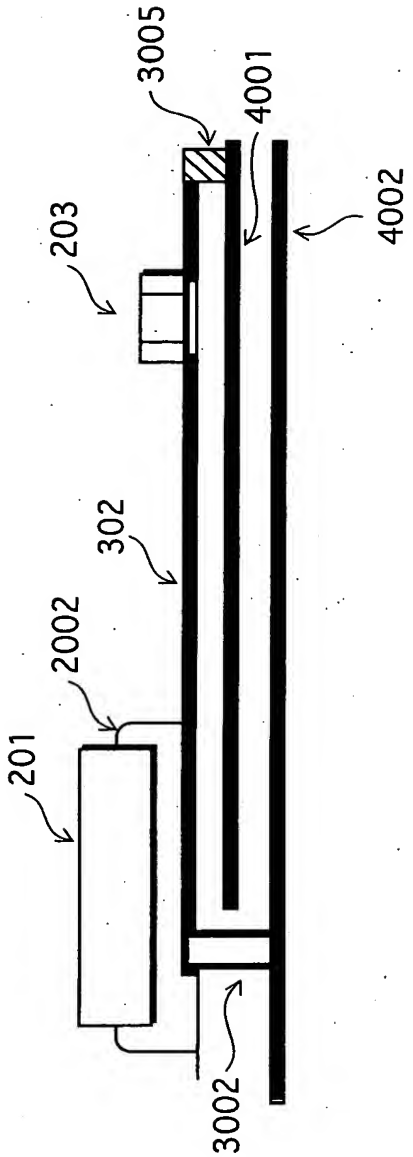


FIG.4

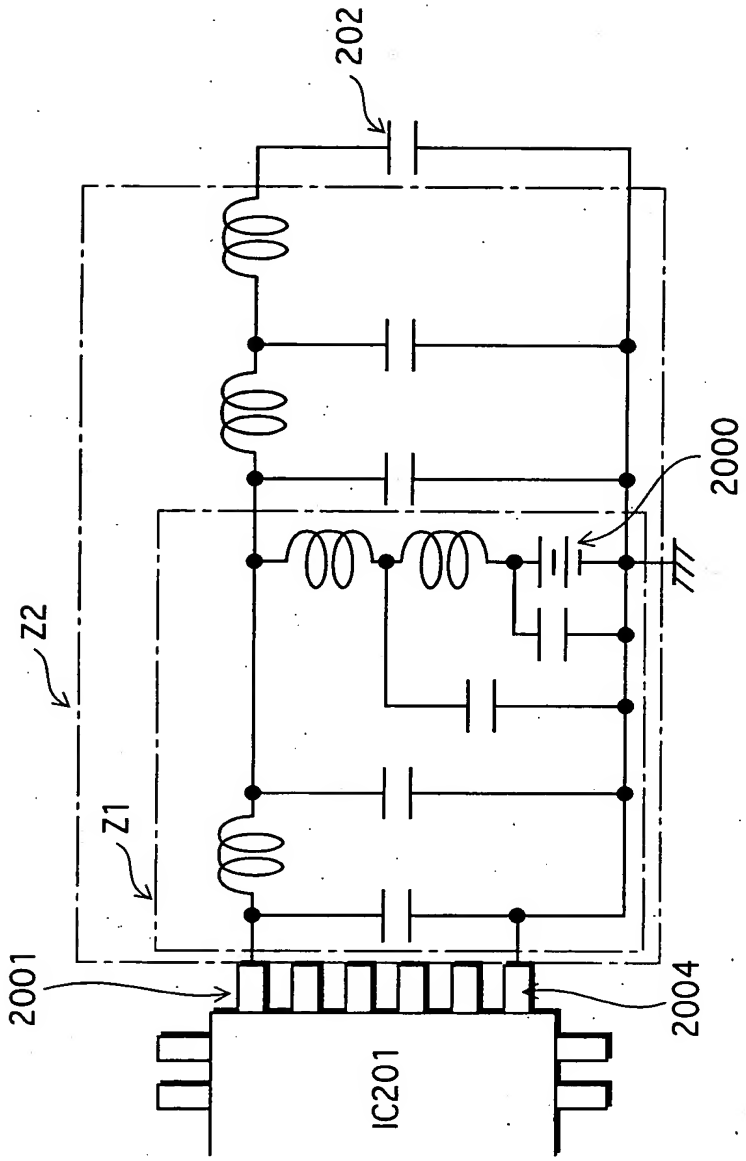


FIG.5

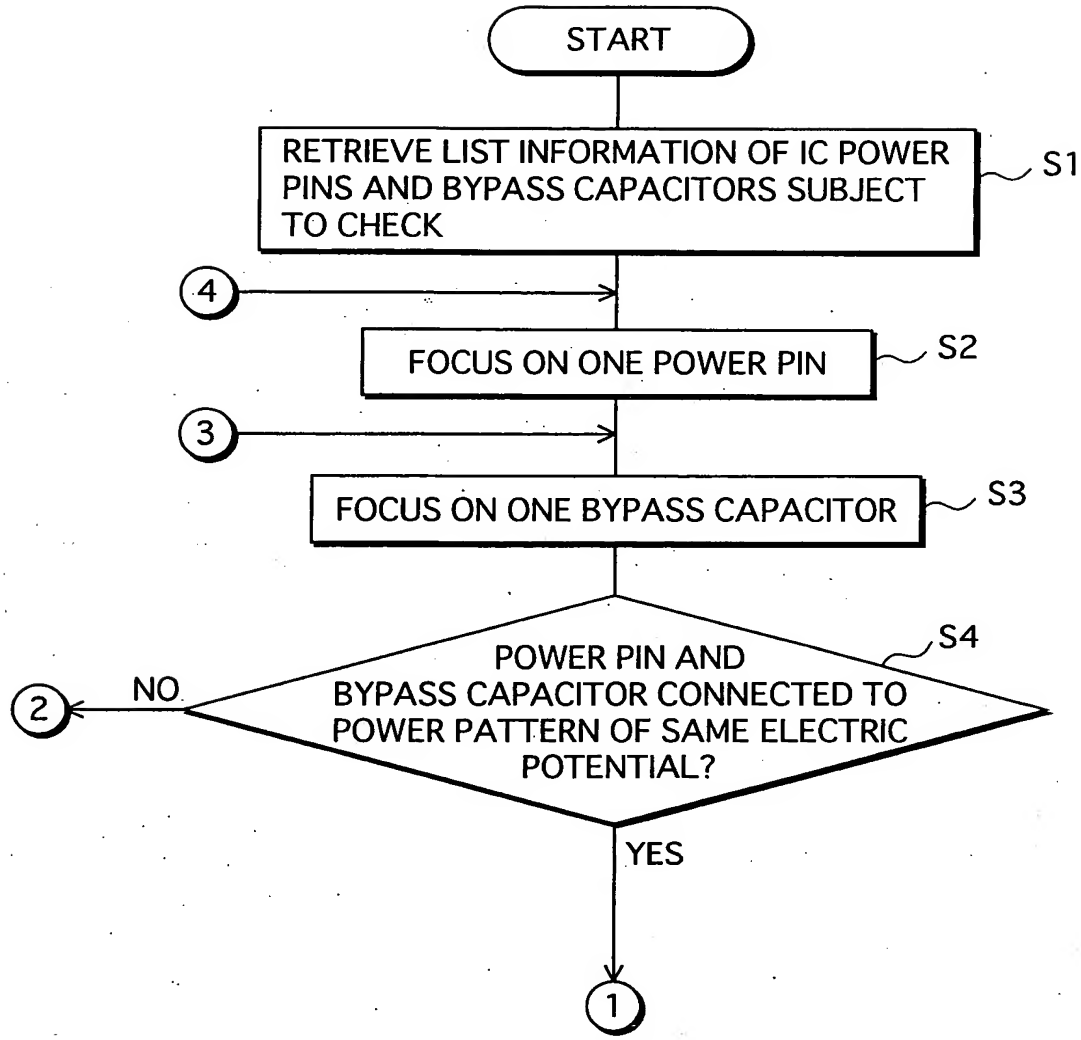

START
RETRIEVE LIST INFORMATION OF IC POWER PINS AND BYPASS CAPACITORS SUBJECT TO CHECK
S1
4
FOCUS ON ONE POWER PIN
S2
3
FOCUS ON ONE BYPASS CAPACITOR
S3
POWER PIN AND BYPASS CAPACITOR CONNECTED TO POWER PATTERN OF SAME ELECTRIC POTENTIAL?
S4
NO
2
YES
1

FIG.6

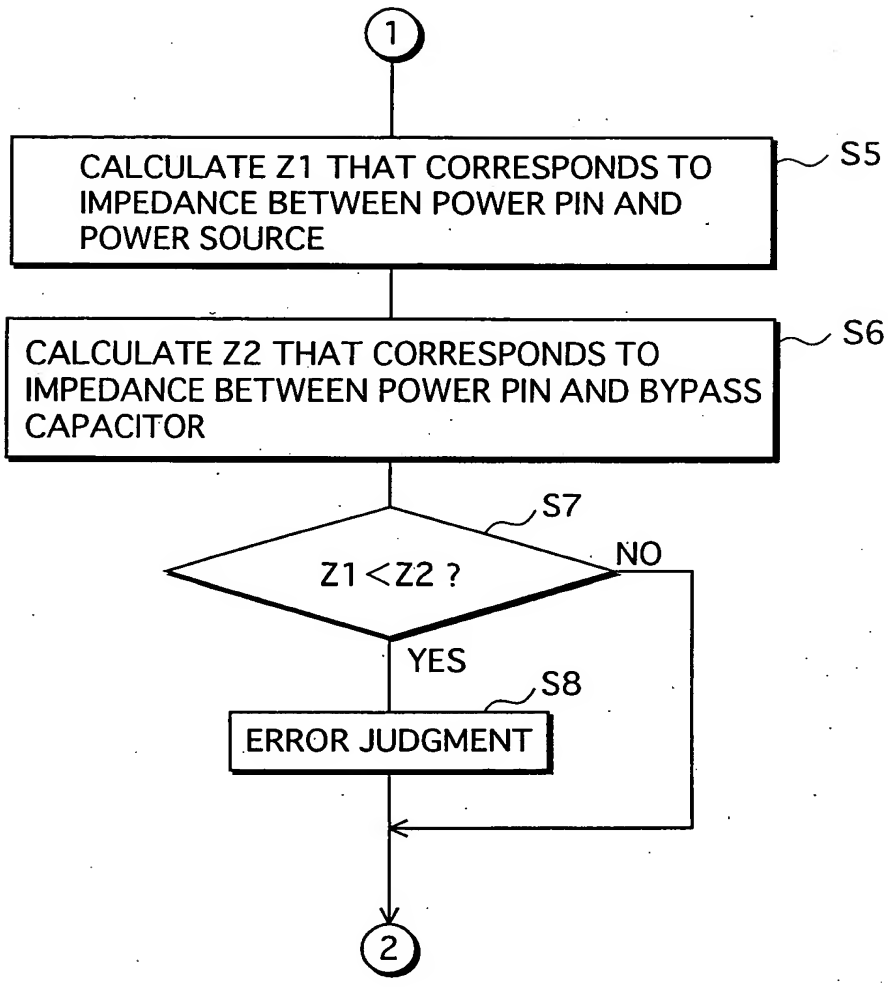

1
CALCULATE Z1 THAT CORRESPONDS TO IMPEDANCE BETWEEN POWER PIN AND POWER SOURCE
S5
CALCULATE Z2 THAT CORRESPONDS TO IMPEDANCE BETWEEN POWER PIN AND BYPASS CAPACITOR
S6
S7
Z1<Z2 ?
NO
YES
S8
ERROR JUDGMENT
2

FIG.7

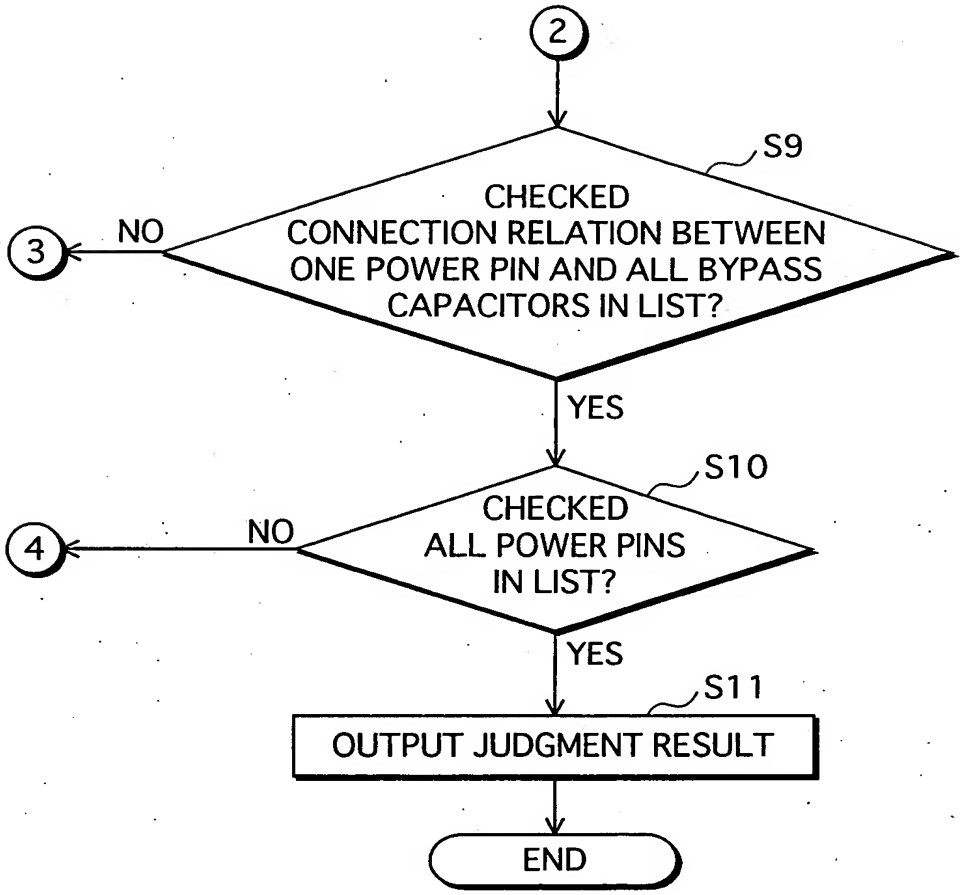

2
S9
CHECKED CONNECTION RELATION BETWEEN ONE POWER PIN AND ALL BYPASS CAPACITORS IN LIST?
NO
3
YES
S10
CHECKED ALL POWER PINS IN LIST?
NO
4
YES
S11
OUTPUT JUDGMENT RESULT
END

FIG.8

800

POWER PIN NUMBER	TERMINAL COORDINATES	NET NAME
2001	(99,99)	N1001
2002	(99,93)	N1002
2003	(97,87)	N1003
⋮	⋮	⋮

FIG.9

900

BYPASS CAPACITOR COMPONENT NUMBER	COMPONENT COORDINATES	NET NAME
202	(105,99)	N1001
203	(105,96)	N1002
204	(97,80)	N1003
205	(104,80)	N1003
⋮	⋮	⋮

FIG.10

1000

WIRING IDENTIFIER	NET NAME	WIRING TYPE	VIA COORDINATES	WIRING WIDTH (mm)	STARTING POINT COORDINATES	ENDING POINT COORDINATES	WIRING LAYER NUMBER
301	N1001	LINE	(101,99)	0.15	(99,99)	(104,99)	1
302	N1002	LINE	(95,93)	0.15	(95,93)	(104,93)	1
303	N1003	LINE	(100,81)	0.15	(97,81)	(103,81)	1
304	N1003	LINE	—	0.15	(97,87)	(97,81)	1
305	N2001	LINE	(101,107)	0.15	(101,99)	(101,107)	4
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮

FIG.11

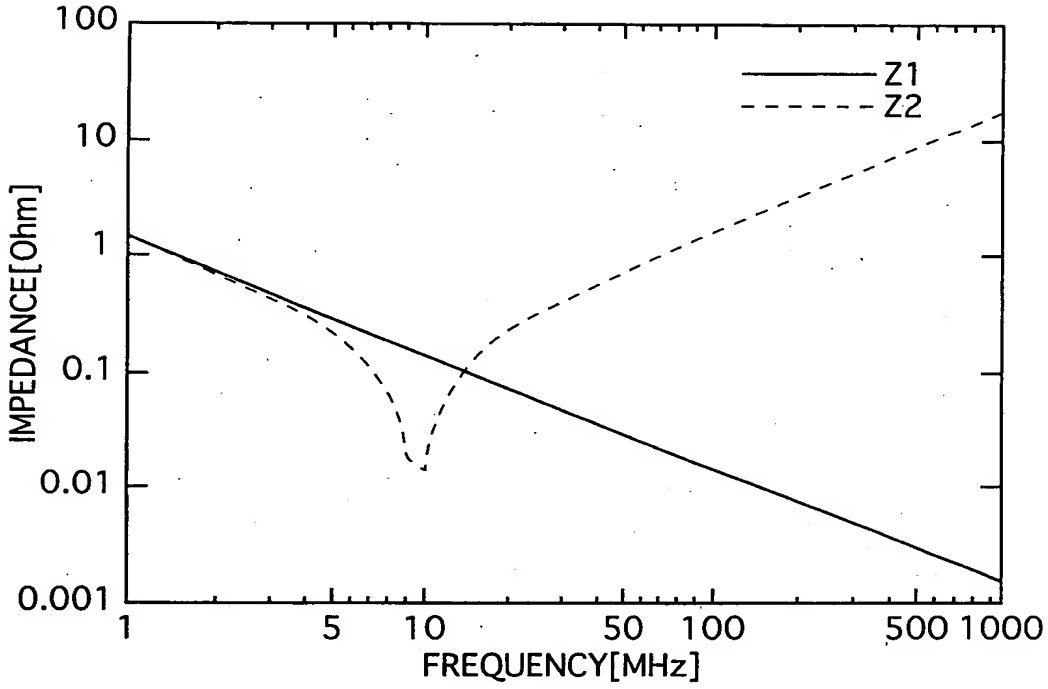

100
10
1
0.1
0.01
0.001
IMPEDANCE[Ohm]
1
5
10
50
100
500
1000
FREQUENCY[MHz]
Z1
Z2

FIG.12

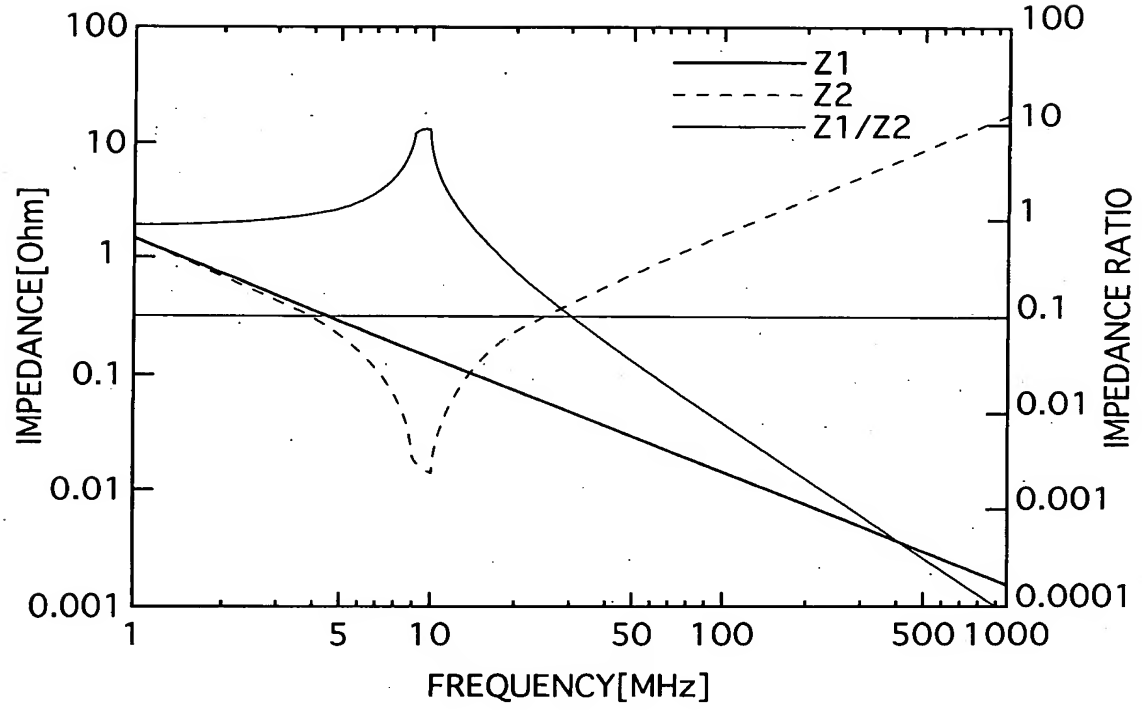

100
10
1
0.1
0.01
0.001
IMPEDANCE[Ohm]
100
10
1
0.1
0.01
0.001
0.0001
IMPEDANCE RATIO
Z1
Z2
Z1/Z2
1
5
10
50
100
500
1000
FREQUENCY[MHz]

FIG.13

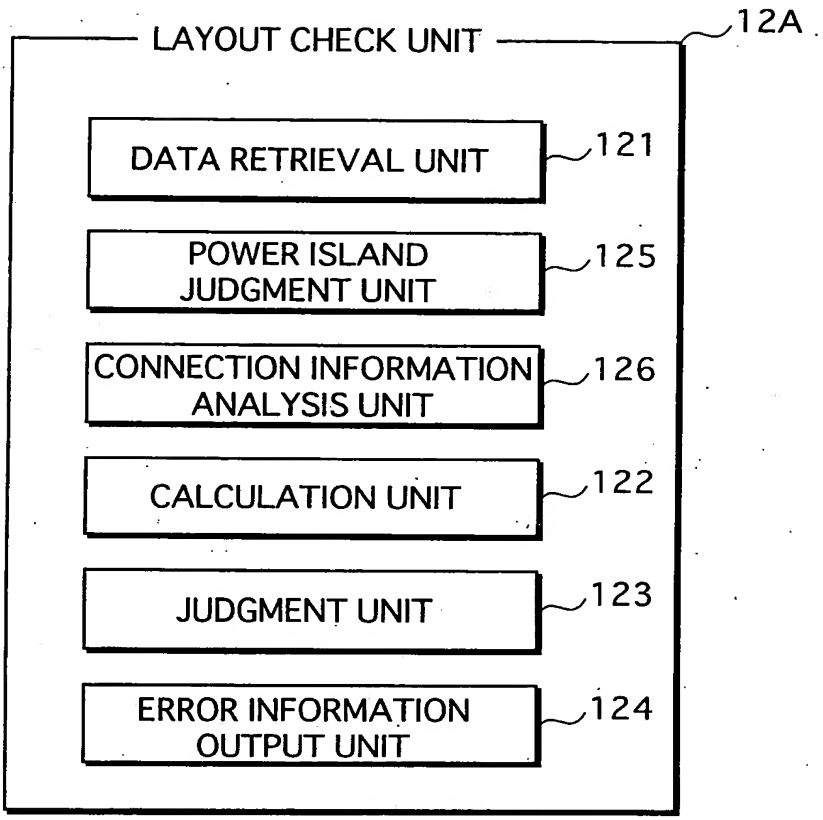

LAYOUT CHECK UNIT
12A
DATA RETRIEVAL UNIT
121
POWER ISLAND JUDGMENT UNIT
125
CONNECTION INFORMATION ANALYSIS UNIT
126
CALCULATION UNIT
122
JUDGMENT UNIT
123
ERROR INFORMATION OUTPUT UNIT
124

FIG.14

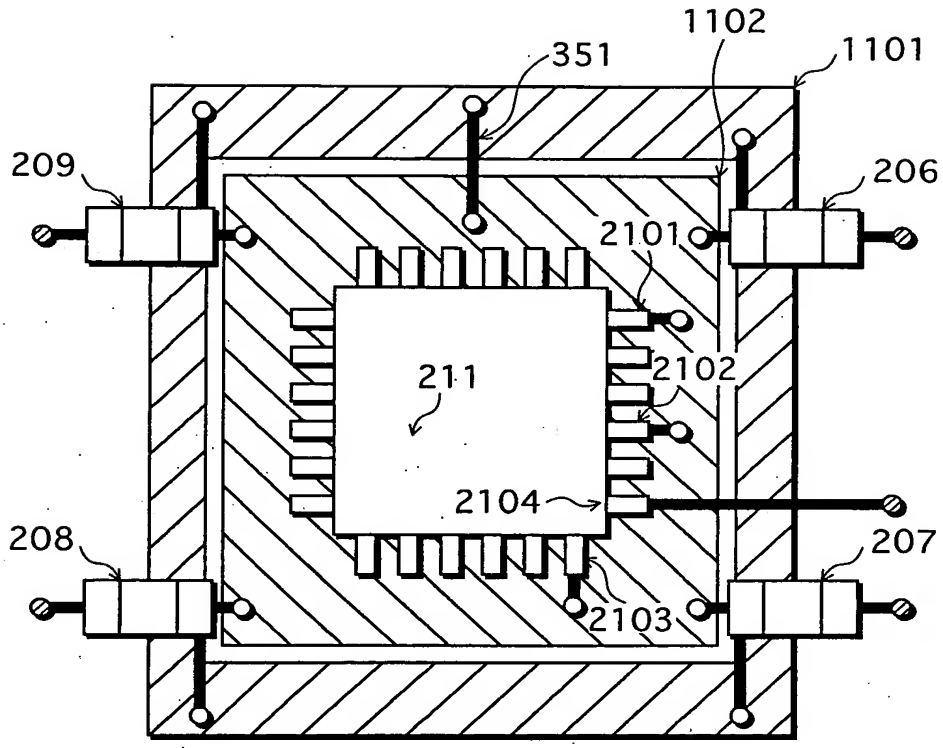
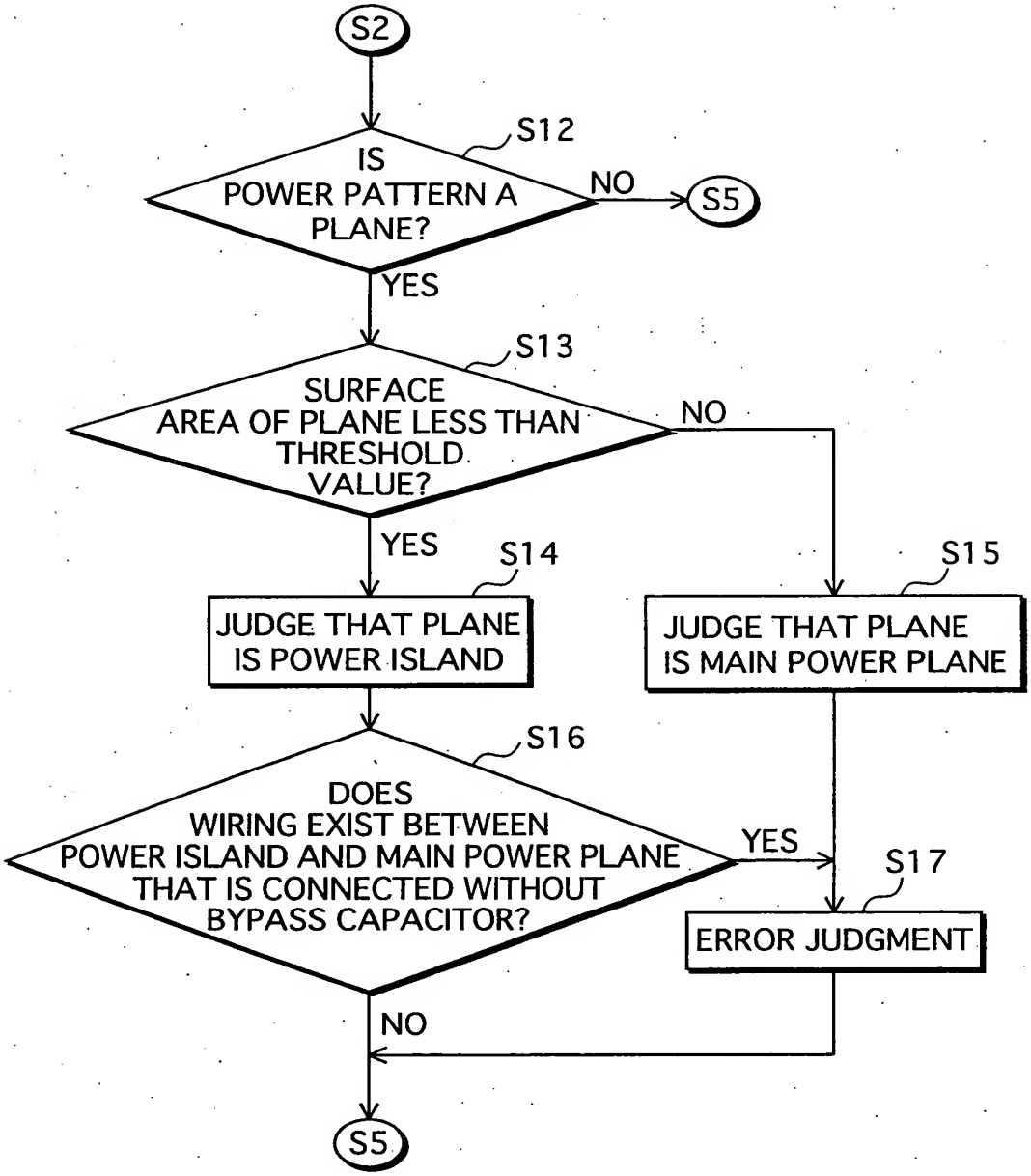


FIG.15


S2
S12
IS POWER PATTERN A PLANE?
NO
S5
YES
S13
SURFACE AREA OF PLANE LESS THAN THRESHOLD VALUE?
NO
YES
S14
JUDGE THAT PLANE IS POWER ISLAND
S15
JUDGE THAT PLANE IS MAIN POWER PLANE
S16
DOES WIRING EXIST BETWEEN POWER ISLAND AND MAIN POWER PLANE THAT IS CONNECTED WITHOUT BYPASS CAPACITOR?
YES
S17
ERROR JUDGMENT
NO
S5